

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Please amend Claims 1, 6, 7, 11, 12, 14, 15, 19 and 27, cancel claims 5, 9, 16 and 29 and add new claims 31-34 as follows:

1. (Currently Amended) A method for processing a speech signal comprising the steps of:
receiving a speech signal to be processed;
dividing said speech signal into multiple frames;
analyzing a frame generated in said dividing step to determine a spoken sound type associated with said frame; and
modifying a sound parameter of at least one of said frame and another frame based on said spoken sound type,
wherein said step of modifying at least one of said frame and another frame includes at least one of (i) boosting an amplitude of said frame when said frame is determined to comprise an unvoiced plosive and (ii) reducing an amplitude of a previous frame when said frame is determined to comprise a voiced or unvoiced plosive.
2. (Original) The method claimed in claim 1, wherein:
said step of analyzing includes performing a spectral analysis on said frame to determine a spectral content of said frame.
3. (Previously Presented) The method claimed in claim 2, wherein:
said step of analyzing includes examining said spectral content of said frame to determine whether said frame includes a voiced or unvoiced plosive.
4. (Original) The method claimed in claim 1, wherein:
said step of analyzing includes determining an amplitude of said frame and comparing

said amplitude of said frame to an amplitude of a previous frame to determine whether said frame includes a plosive sound.

5. (Cancelled)

6. (Currently Amended) The method claimed in claim 15, wherein:

said step of modifying at least one of said frame and another frame includes boosting an amplitude of said frame when said frame is determined to include an unvoiced plosive.

7. (Currently Amended) The method claimed in claim 1, wherein:

said step of modifying at least one of said frame and another frame further includes changing a parameter associated with said frame in a manner that enhances intelligibility of an output signal.

8. (Previously Presented) The method claimed in claim 1, wherein:

said step of modifying at least one of said frame and another frame based on said spoken sound type comprises modifying said frame and said another frame.

9. (Cancelled)

10. (Original) A computer readable medium having program instructions stored thereon for implementing the method of claim 1 when executed within a digital processing device.

11. (Currently Amended) A method for processing a speech signal comprising the steps of: providing a speech signal that is divided into time-based frames;

analyzing each frame of said frames in the context of surrounding frames to determine a spoken sound type associated with said frame; and

adjusting an amplitude of selected frames based on a result of said step of analyzing,

wherein said step of adjusting includes at least one of (i) increasing the amplitude of said

frame when said frame is determined to include an unvoiced plosive and (ii) decreasing the amplitude of a second frame that precedes said frame when said frame is determined to include a voiced or unvoiced plosive.

12. (Currently Amended) The method of claim 11, wherein:
said step of adjusting includes adjusting the amplitude of a second frame in a manner that enhances intelligibility of an output signal.
13. (Cancelled)
14. (Currently Amended) The method of claim 11, wherein:
said step of adjusting includes increasing the amplitude of said frame when said spoken sound type associated with said frame includes an unvoiced plosive.
15. (Currently Amended) The method of claim 11, wherein:
said step of adjusting includes increasing the amplitude of a second first frame when said spoken sound type associated with said second first frame includes an unvoiced fricative.
16. (Cancelled)
17. (Original) The method of claim 11, wherein:
said step of analyzing includes comparing an amplitude of a first frame to an amplitude of a frame previous to said first frame.
18. (Original) A computer readable medium having program instructions stored thereon for implementing the method claimed in claim 11 when executed in a digital processing device.
19. (Currently Amended) A system for processing a speech signal comprising:
means for receiving a speech signal that is divided into time-based frames;

means for determining a spoken sound type associated with each of said frames; and
means for modifying a sound parameter of selected frames based on spoken sound type to enhance signal intelligibility.

wherein said means for modifying includes a means for at least one of (i) increasing the amplitude of a frame that comprises an unvoiced plosive and (ii) reducing the amplitude of a frame that precedes a frame that comprises a voiced or unvoiced plosive.

20. (Original) The system claimed in claim 19, wherein:
said system is implemented within a linear predictive coding (LPC) encoder.
21. (Original) The system claimed in claim 19, wherein:
said system is implemented within a code excited linear prediction (CELP) encoder.
22. (Original) The system claimed in claim 19, wherein:
said system is implemented within a linear predictive coding (LPC) decoder.
23. (Original) The system claimed in claim 19, wherein:
said system is implemented within a code excited linear prediction (CELP) decoder.
24. (Original) The system claimed in claim 19, wherein:
said means for determining includes means for performing a spectral analysis on a frame.
25. (Original) The system claimed in claim 19, wherein:
said means for determining includes means for comparing amplitudes of adjacent frames.
26. (Original) The system claimed in claim 19, wherein:
said means for determining includes means for ascertaining whether a frame includes a voiced or unvoiced sound.

27. (Currently Amended) The system claimed in claim 19, wherein:
said means for modifying further includes means for boosting the amplitude of a second frame that includes a spoken sound type that is typically less intelligible than other sound types.
28. (Original) The system claimed in claim 19, wherein:
said means for modifying includes means for boosting the amplitude of a frame that includes an unvoiced plosive.
29. (Cancelled)
30. (Previously Presented) The system claimed in claim 19, wherein:
said means for determining a spoken sound type includes means for determining whether a frame includes at least one of the following: a vowel sound, a voiced fricative, an unvoiced fricative, a voiced plosive, and an unvoiced plosive.
31. (New) A method for processing a speech signal comprising the steps of:
receiving a speech signal to be processed;
dividing said speech signal into multiple frames;
analyzing a frame generated in said dividing step to determine a spoken sound type associated with said frame; and
modifying a sound parameter of said frame and another frame based on said spoken sound type,
wherein said step of modifying said frame and said another frame includes reducing an amplitude of a previous frame when said spoken sound type is an unvoiced plosive.
32. (New) A method for processing a speech signal comprising the steps of:
providing a speech signal that is divided into time-based frames;
analyzing each frame of said frames in the context of surrounding frames to determine a spoken sound type associated with said frame; and

adjusting an amplitude of selected frames based on a result of said step of analyzing,
wherein said step of adjusting includes decreasing the amplitude of a second frame that is
previous to said frame when said spoken sound type associated with said frame includes a voiced
or unvoiced plosive.

33. (New) A system for processing a speech signal comprising:
means for receiving a speech signal that is divided into time-based frames;
means for determining a spoken sound type associated with each of said frames; and
means for modifying a sound parameter of selected frames based on spoken sound type to
enhance signal intelligibility,
wherein said means for modifying includes means for reducing the amplitude of a frame
that precedes a frame that includes an unvoiced plosive.

34. (New) A method for processing a speech signal comprising the steps of:
receiving a speech signal to be processed;
dividing said speech signal into multiple frames;
analyzing a frame generated in said dividing step to determine a fricative sound type
associated with said frame; and
boosting an amplitude of said frame when said frame comprises an unvoiced fricative
sound type but not boosting the amplitude of said frame when said frame comprises a voiced
fricative.

35. (New) The method claimed in claim 34, wherein:
said step of analyzing includes performing a spectral analysis on said frame to determine
a spectral content of said frame.

36. (New) The method claimed in claim 35, wherein:
said step of analyzing includes examining said spectral content of said frame to determine
whether said frame includes a voiced or unvoiced fricative.

37. (New) The method claimed in claim 34, wherein:

said step of analyzing includes determining an amplitude of said frame and comparing said amplitude of said frame to an amplitude of a previous frame to determine whether said frame includes a plosive sound.

38. (New) The method claimed in claim 34, wherein:

said step of boosting an amplitude of said frame further includes changing a parameter associated with said frame in a manner that enhances intelligibility of an output signal.

39. (New) The method claimed in claim 34, wherein:

said step of boosting an amplitude of said frame further comprises modifying another frame.

40. (New) A computer readable medium having program instructions stored thereon for implementing the method of claim 34 when executed within a digital processing device.